

WHAT IS CLAIMED IS:

1. A catheter for imaging a lumen wall of a blood vessel comprising:

a catheter body including a lateral window disposed in a front portion of the body;

5 a fiber optic cable disposed in the body for transmitting light;

an optical head disposed adjacent the window for transmitting the light through the window and toward the lumen wall and for receiving reflected light from the lumen wall and transmitting the received reflected light to the cable; and

10 a deflector arrangement projecting from an external surface of the catheter body adjacent the window for interacting with a flow of blood through the vessel to displace the window laterally toward a region of the lumen wall opposing the window, to minimize an amount of blood disposed between the window and the lumen wall.

15 2. The catheter according to claim 1 wherein the deflector arrangement comprises fins disposed on opposite sides of the catheter body and arranged to be displaced toward the lumen wall by the force of blood flow.

20 3. The catheter according to claim 2 wherein the deflector arrangement includes at least first and second fins disposed on respective opposite sides of the catheter body, the window disposed circumferentially

between the first and second fins as the catheter body is viewed from an end thereof.

4. The catheter according to claim 2 wherein the fins are generally diametrically opposed on the catheter body.

5 5. The catheter according to claim 4 wherein there are two sets of diametrically opposed fins, each set comprising a plurality of fins.

6. The catheter according to claim 2 wherein each fin extends in a direction inclined obliquely relative to a longitudinal axis of the catheter, as the catheter is viewed from the side.

10 7. A catheter for imaging a lumen wall of a blood vessel, comprising:

a catheter body including a lateral window disposed in a front portion of the catheter body;

15 means for emitting radiation through the window and toward the lumen wall, and for receiving reflected radiation from the lumen wall; and

means disposed on the catheter for displacing the window toward a region of the lumen wall opposing the window to minimize an amount of blood disposed between the window and the lumen wall.

8. A method of imaging a wall of a lumen of a blood vessel comprising the steps of:

- A) inserting a catheter body into the vessel;
- 5 B) emitting radiation through a side window formed in an outer periphery of the body in a front portion thereof;
- C) receiving radiation reflected off the lumen wall and transmitting the reflected light to imaging equipment; and
- 10 D) causing a deflector arrangement on the body to react with blood flowing through the vessel to displace the window toward a region of the lumen wall opposing the window to thereby minimize an amount of blood disposed between the window and the lumen wall.

9. The method according to claim 8 wherein the optical head emits infrared radiation in the near-IR range in step B.

15 10. The method according to claim 8 wherein step A comprises inserting the catheter into the vessel in the direction of blood flow.

11. The method according to claim 10 wherein step A comprises inserting the catheter into a coronary artery.

20 12. The method according to claim 11 wherein step A comprises inserting the catheter into the vessel in a direction opposing blood flow.